Global Hydrology Resource Center

Data User Guide

GPM Ground Validation Rain Gauges NASA ACHIEVE IPHEx

Introduction

The GPM Ground Validation Rain Gauges IPHEx dataset was gathered during the GPM Ground Validation Integrated Precipitation and Hydrology Experiment (IPHEx) in North Carolina from May 9, 2014 through June 14, 2014. The dataset includes data from the Optical Scientific Optical Rain Gauge instrument and Novalynx Tipping Bucket Rain Gauge instrument which are both part of the NASA Goddard Space Flight Center (GSFC) ACHIEVE ground-based mobile laboratory. The optical rain gauge obtains high sensitivity optical measurements for precipitation rate and quantity and measures 24 hour cumulative precipitation, precipitation rate, and temperature. The tipping bucket rain gauge is a standard tipping bucket rain gauge that measures 24 hour cumulative precipitation. Data files are available in the netCDF3 data format.

Citation

Tsay, Si-Chee, Adrian Loftus and Peter Pantina. 2015. GPM Ground Validation Rain Gauges NASA ACHIEVE IPHEx [indicate subset used]. Dataset available online from the NASA Global Hydrology Resource Center DAAC, Huntsville, Alabama, U.S.A.. https://fcportal.nsstc.nasa.gov/pub/gpm_validation/iphex/disdrometers_and_gauges/rain_gauge_NASA_ACHIEVE/. DOI: http://dx.doi.org/10.5067/GPMGV/IPHEX/GAUGES/DATA101.

Keywords:

GHRC, NASA, GPM GV, ACHIEVE, IPHEX; optical rain gauge, tipping bucket rain gauge; precipitation rate, temperature, cumulative precipitation;

Campaign

The Global Precipitation Measurement (GPM) mission Ground Validation (GV) campaign used a variety of methods for validation of GPM satellite constellation

measurements prior to launch of the GPM Core Satellite, which launched on February 27th, 2014. The validation effort included numerous GPM-specific and joint-agency/international external field campaigns, using state of the art cloud and precipitation observational infrastructure (polarimetric radars, profilers, rain gauges, disdrometers). Surface rainfall was measured by very dense rain gauge and disdrometer networks at various field campaign sites. These field campaigns accounted for the majority of the effort and resources expended by Global Precipitation Measurement (GPM) mission Ground Validation (GV). More information about the GPM mission is available at http://pmm.nasa.gov/GPM.

The GPM Integrated Precipitation and Hydrology Experiment (IPHEx) was held in North Carolina during the months of April-June 2014. The goal of IPHEx was to characterize warm season orographic precipitation regimes and the relationship between precipitation regimes and hydrologic processes in regions of complex terrain. The IPHEx campaign was part of the development, evaluation, and improvement of remote-sensing precipitation algorithms in support of the GPM mission through NASA GPM GV field campaign (IPHEX_GVFC) and the evaluation of Quantitative Precipitation Estimation (QPE) products for hydrologic forecasting and water resource applications in the Upper Tennessee, Catawba-Santee, Yadkin-Pee Dee, and Savannah river basins (IPHEX-HAP, H4SE). NOAA Hydrometeorology Testbed (HTM) has synergy with this project. More information about IPHEx is available at http://gpm.nsstc.nasa.gov/iphex/.

Instrument Description

The Optical Scientific Optical Rain Gauge instrument was located near Maggie Valley, North Carolina, USA lat: 35.5198, lon:-83.0947 (lat: 35° 31' 11.2794" lon: 83° 5' 40.92") during the IPHEx campaign. It obtains high sensitivity optical measurements for precipitation rate and quantity; it measures 24 hour cumulative precipitation, precipitation rate, and temperature. More information about this instrument is available at http://www.opticalscientific.com/pdf/brochures/ORG/ORG815DS130405.pdf.

The Novalynx Tipping Bucket Rain Gauge instrument was located near Maggie Valley, North Carolina, USA lat: 35.5198, lon:-83.0947 (lat: 35° 31' 11.2794" lon: 83° 5' 40.92") during the IPHEx campaign. It is a standard tipping bucket range gauge that obtains 24 hour cumulative precipitation measurements. More information about this instrument is available at http://novalynx.com/products/rain-gauges/.

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File Naming Convention

The IPHEx Optical Rain Gauge dataset files are named with the following convention:

IPHEX_ORG815_raingauge_YYYYMMDD.L1b.nc

where,

IPHEx = GPM Integrated Precipitation and Hydrology Experiment
ORG815 = Instrument model number
raingauge = instrument (Optical Scientific Optical Rain Gauge)
YYYYMMDD = year, month, and day of data
L1b = data processing level (1B)
nc = data file format (netCDF)

The IPHEx Tipping Bucket Rain Gauge dataset files are named with the following convention:

IPHEx_TRG260_raingauge_YYYYMMDD.L1b.nc

where,

IPHEx = GPM Integrated Precipitation and Hydrology Experiment
TRG260 = Instrument model number
raingauge = instrument (Novalynx Tipping Bucket Rain Gauge)
YYYYMMDD = year, month, and day of data
L1b = data processing level (1B)
nc = data file format (netCDF)

Data Format Description

The GPM Ground Validation Rain Gauges IPHEx data is available in netCDF3 format with a data processing level of 1B. More information about NASA data processing levels can be found at http://science.nasa.gov/earth-science/earth-science-data/data-processing-levels-for-eosdis-data-products/.

Contact Information

To order these data or for further information, please contact:

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